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*MEGADERAION SINEMURIENSE* N. G. N. SP.,  
A NEW FOSSIL ENTEROPNEUST  
OF THE SINEMURIAN OF OSTENO IN LOMBARDY

**Abstract.** — *Megaderaion sinemuriense*, a new genus and new species of fossil enteropneust discovered in the Sinemurian deposit of Osteno in Lombardy, is described. This is the sole fossil representative of this class, whose body has been discovered.

**Riassunto.** — *Megaderaion sinemuriense* n. g. n. sp., un nuovo enteropneusto fossile del Sinemuriano di Osteno in Lombardia.

Viene descritto *Megaderaion sinemuriense*, nuovo genere e nuova specie di enteropneusto fossile rinvenuto nel giacimento sinemuriano di Osteno in Lombardia. Si tratta dell'unico rappresentante di questa classe di cui si sia rinvenuto il corpo allo stato fossile.

During the course of the study that is being carried out on the fossil material of the Sinemurian deposit of Osteno <sup>(1)</sup> by the Palaeontology Section of the Museo Civico di Storia Naturale di Milano, an interesting fossil, discovered in autumn 1980 by Mr. Giulio Maini, an enthusiastic private researcher <sup>(2)</sup>, has been identified. It consists in a flat piece of rock bearing the imprint of a small soft-bodied invertebrate in the form of a thin film of organic material. The animal's body, the outline of which is quite clear, is made up of three successive main parts: an initial ogival part (proboscis), an intermediate rectangular part sagittally elongated

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<sup>(1)</sup> The Osteno deposit is situated on the east bank of Lugano Lake, in the province of Como. The fossil-bearing strata of the outcrop, which are attributed to the Lower Sinemurian, « *bucklandi* zone », on the basis of the presence of *Coroniceras bisulcatum* (PINNA 1967), contain the remains of numerous organisms, including plants, fishes, cephalopods, echinoderms, « worms » *s. l.*, and numerous species of crustaceans. Part of this material has been published in a series of notes (PINNA 1967, 1968, 1969, 1972; ARDUINI, PINNA, TERUZZI 1980).

<sup>(2)</sup> We wish to express our thanks to Mr. Giulio Maini for having passed the specimen to the Museo Civico di Storia Naturale di Milano.

(collar), and a vermiform end part (trunk), which in the fossil is bent back on itself. The small size of the fossil (c. 20 mm.) and the evident granularity of the rock when magnified make it difficult to define the animal's more minute structures with precision: however two elongated reniform swellings, situated along the proximal portion of the vermiform end part, can be clearly seen and are interpreted as external gonads. Only traces of other structures are apparent, what makes their interpretation very difficult.

The specimen is characterized by tripartite metamerism and a form of the various body parts typical of representatives of the class *Enteropneusta* GEGENBAUR, 1870, no fossil representatives of which were hitherto known, except in the form of traces of activity, often of doubtful interpretation (SOERGEL 1923, MÄGDEFRAU 1932, VAN DER HORST 1940, KAZMIERCZAK and PSZCZOLKOWSKI 1969, WETZEL 1972).

The following is thus a description of the first specimen of an enteropneust of which the body is known in the fossil state. On the basis of the specimen a new genus and new species are described.

#### Gen. *Megaderaion* nov.

*Etymology*: from the Greek mega=large and deraion=collar.

*Type species*: *Megaderaion sinemuriense* n. sp.

*Description*: coinciding with that of the type species.

#### *Megaderaion sinemuriense* n. sp.

*Etymology*: from its sinemurian age.

*Holotype*: N° i 751, Collection of the Museo Civico di Storia Naturale di Milano.

*Place of discovery*: Osteno (Como).

*Geological age*: Lower Sinemurian, « *bucklandi* zone ».

#### *Description*

The body of *Megaderaion sinemuriense* is clearly divided into three quite distinct regions: proboscis, collar and trunk.

The proboscis is ogival in shape, 4.5 mm long and has a maximum width of 1.6 mm in the median part. The distal portion and central zone are not very marked and can be distinguished only through a slight darkening of the rock; the base and margins of the median region are on the other hand more marked, i.e. they retain a larger quantity of dark-coloured or yellowish organic material in which traces of structures

difficult to interpret can be perceived. The proboscis slowly tapers from the median region to the point of connection with the collar.

The collar, which is sharply defined, is rectangular, about 2.2 mm long and has a maximum width of about 1.9 mm. In relation to the trunk and proboscis it is proportionally longer than in living enteropneusts.

The trunk, vermiform as a whole, is about 13.3 mm long. In it two parts can be distinguished: a branchio-genital region and a tail. It is not on the contrary possible to distinguish the hepatic region, which in present enteropneusts is situated after the two preceding regions.

The branchio-genital region is about 5 mm long and 0.8 mm wide. At about 1 mm from the collar-trunk boundary broadens to a maximum width of 1.5 mm, at a point corresponding to two reniform structures interpreted as external gonads.

These are 0.6-0.7 mm wide and 1.8 mm long. In the tract of the branchio-genital region running from the proximal end to the rear end of the gonads, somewhat irregular circular or U-shaped structures, with a maximum width of not more than 0.2 mm, are observed. These structures seem to be arranged with a certain alignment and may perhaps be the remains of the branchial apparatus or parts of the gonads.

The tail is narrow and elongated, showing less consistency than the branchio-genital region, and is to a large extent folded back on itself, so that its whole length is not visible.

#### *Systematic position*

Most of the characters that can be observed in our fossil specimen are external morphological characters and hence do not appear to be useful for determination at family level.

The class *Enteropneusta* is generally subdivided (HYMAN 1959), on the basis of internal anatomical characters difficult to observe in a fossil, into three families: *Harrimaniidae*, containing the types considered to be most primitive, *Spengelidae* and *Ptychoderidae*, the last comprising the most evolved types, including the *Balanoglossus* DELLE CHIAJE, 1829, the best-known genus of the whole class.

Where classification at family level is concerned, interest attaches to the structure of the branchio-genital region of *Megaderaion* which, furnished with what we have interpreted as external gonads, seems to allow a comparison of our specimen with the genus *Stereobalanus* SPENGEL, 1901, a morphologically very similar representative of the family *Harrimaniidae*. The major differences between *Megaderaion* and the present *Stereobalanus* consist in the greater development of the collar and the lesser development of the trunk in the fossil specimen.

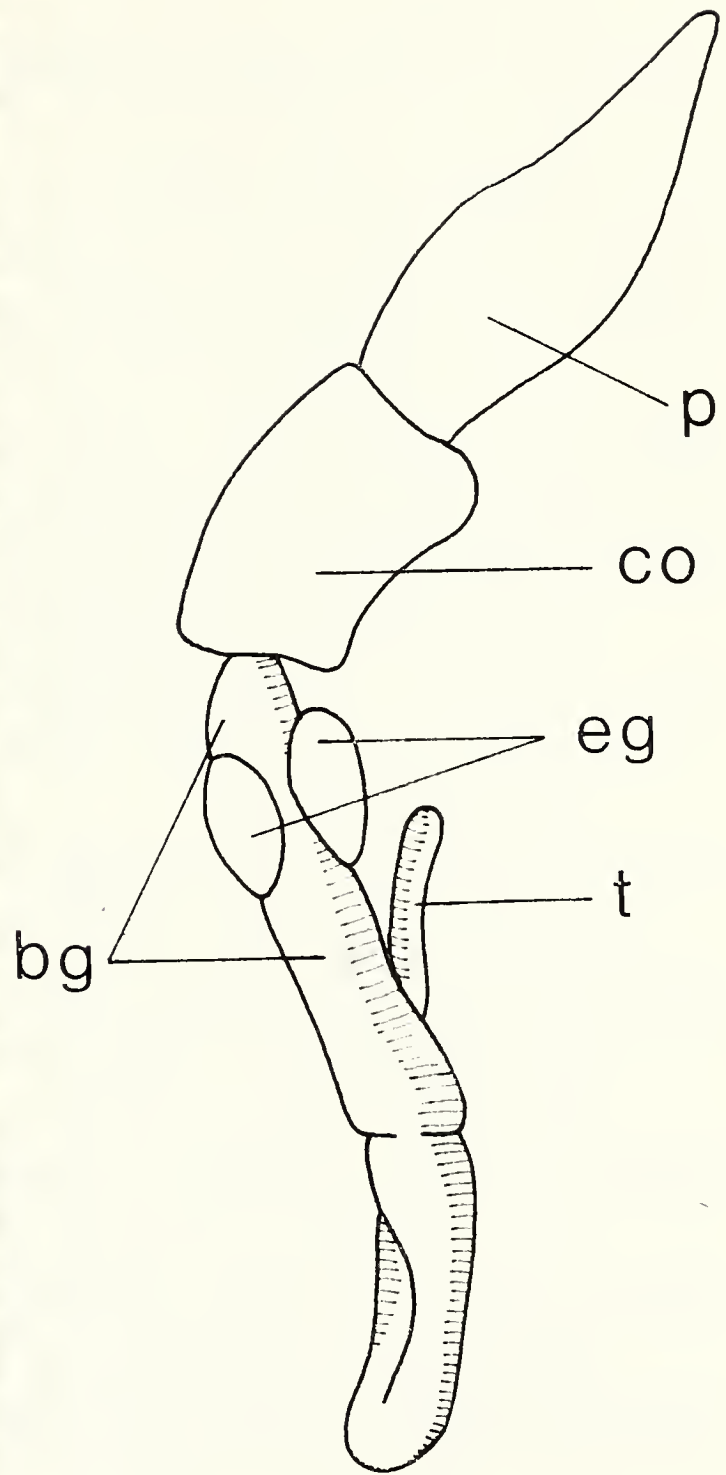
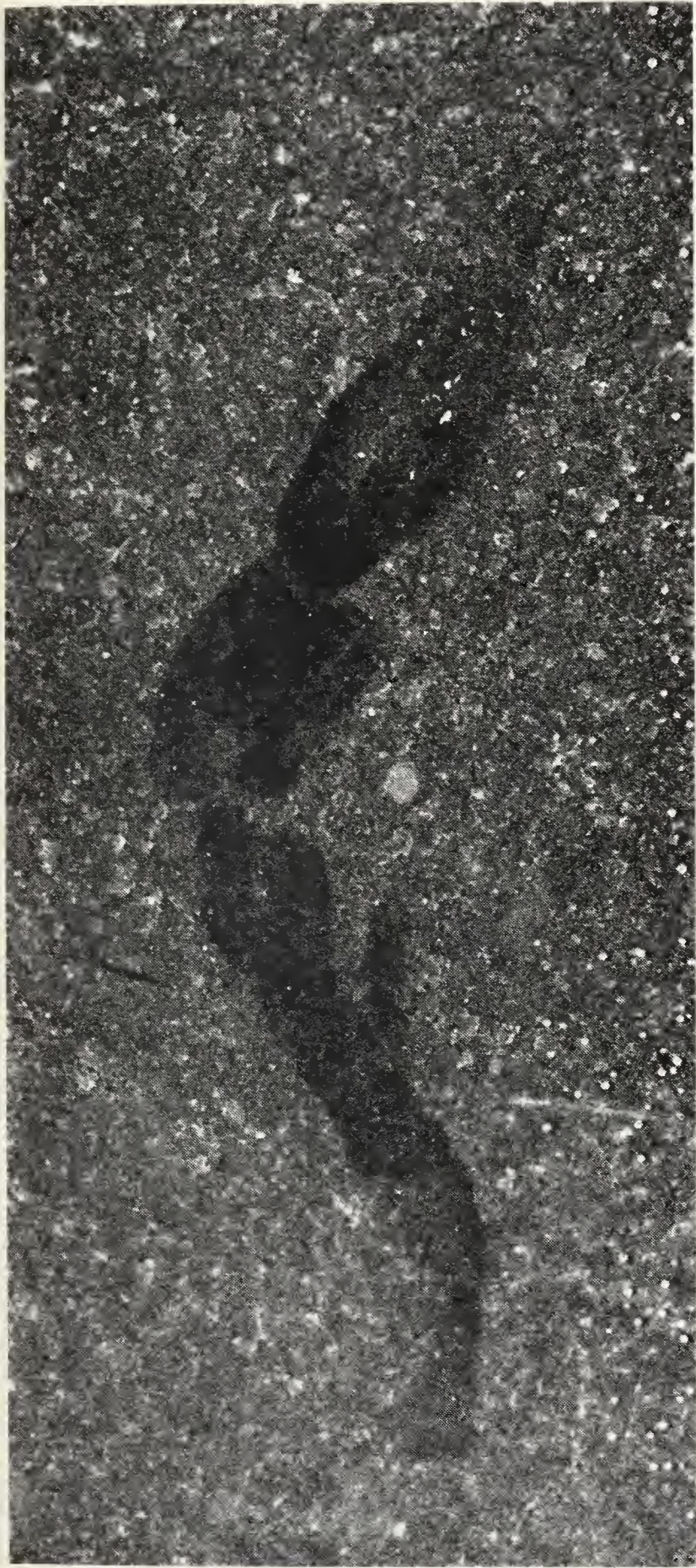


Fig. 1. — *Megaderaion sinemuriense* n.g.n.sp. Lower Sinemurian, Osteno, Como.  
(× 8 ca)

bg = branchio-genital region, co = collar,  
eg = external gonads, p = proboscis, t = tail.

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